

**Notice of Allowability**

Application No.

10/733,444

Examiner

Weilun Lo

Applicant(s)

SHAHER ET AL.

Art Unit

3747

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the election filed on 05/19/2005.
2. ☒ The allowed claim(s) is/are 6,7,9-15,17,19 and 20.
3. ☒ The drawings filed on 12 December 2003 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All   b) ☐ Some\*   c) ☐ None   of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),  
Paper No./Mail Date 12/12/2003
4. ☐ Examiner's Comment Regarding Requirement for Deposit  
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_\_.
7. ☒ Examiner's Amendment/Comment
8. ☐ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_.

### EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. Clifford Crowder on 7/1/05.

The application has been amended as follows:

#### **Listing of all Claims and their current status -**

Claims 1-5 (canceled)

6. (currently amended) A method of controlling a fuel system, comprising:

operating a first pumping element to produce a first flow of pressurized fuel;

operating a second pumping element to produce a second flow of pressurized fuel;

selectively energizing a first solenoid to vary at least one of a fuel pressure and a fuel flow rate of the first flow of pressurized fuel;

selectively energizing a second solenoid to vary at least one of a fuel pressure and a fuel flow rate of the second flow of pressurized fuel; and

directing the first and second flows of pressurized fuel to a fuel injection system associated with a combustion chamber[.];

directing the first flow of pressurized fuel through a first manifold to a fuel injection unit; and

directing the second flow of pressurized fuel through a second manifold to the fuel injection unit.

7. (original) The method of claim 6, further including combining the first and second flows of pressurized fuel for injection into the combustion chamber.

Claim 8 (canceled)

9. (currently amended) The method of claim [[8]]6, further including operating the fuel injection unit to selectively inject the first and second flows of pressurized fuel into the combustion chamber.

10. (currently amended) A method of controlling a fuel system, comprising:

operating a first pumping element to produce a first flow of pressurized fuel;

operating a second pumping element to produce a second flow of pressurized fuel;

selectively energizing a first solenoid to vary at least one of a fuel pressure and a fuel flow rate of the first flow of pressurized fuel;

selectively energizing a second solenoid to vary at least one of a fuel pressure and a fuel flow rate of the second flow of pressurized fuel;

directing the first and second flows of pressurized fuel to a fuel injection system associated with a combustion chamber ~~The method of claim 6, further including;~~

directing the first flow of pressurized fuel through a first manifold to a first fuel injection unit associated with the combustion chamber;

directing the second flow of pressurized fuel through a second manifold to a second fuel injection unit associated with the combustion chamber; and

actuating at least one of the first and second fuel injection units to inject one of the first and second flows of pressurized fuel into the combustion chamber.

11. (original) A fuel pumping system for an engine having at least one combustion chamber, comprising:

a fuel injection system associated with the at least one combustion chamber, the fuel injection system operable to inject an amount of pressurized fuel into the combustion chamber;

a first manifold in fluid communication with the fuel injection system;

a second manifold in fluid communication with the fuel injection system;

a first pumping element adapted to direct a first flow of pressurized fuel through the first manifold to the fuel injection system; and

a second pumping element adapted to direct a second flow of pressurized fuel through the second manifold to the fuel injection system.

12. (original) The fuel pumping system of claim 11, wherein the fuel injection system includes a fuel injection unit adapted to selectively inject one of the first and second flows of pressurized fuel into the combustion chamber.

13. (original) The fuel pumping system of claim 11, wherein the fuel injection system includes:

a first fuel injection unit in fluid communication with the first manifold; and

a second fuel injection unit in fluid communication with the second manifold.

14. (currently amended) An engine system, comprising:

an engine block defining at least one combustion chamber;

a pump drive;

a first pumping element operatively connected to the pump drive and operable to produce a first flow of pressurized fuel;

a second pumping element operatively connected to the pump drive and operable to produce a second flow of pressurized fuel;

Art Unit: 3747

a first solenoid operatively connected to the first pumping element and operable to vary at least one of a fuel pressure and a fuel flow rate of the first flow of pressurized fuel;

a second solenoid operatively connected to the second pumping element and operable to vary at least one of a fuel pressure and a fuel flow rate of the second flow of pressurized fuel; ~~and~~

a fuel injection system operable to selectively inject the first and second flows of pressurized fuel into the at least one combustion chamber[.];

a first manifold providing fluid communication between the first pumping element and the fuel injection system; and

a second manifold providing fluid communication between the second pumping element and the fuel injection system.

15. (original) The engine system of claim 14, wherein each of the first and second pumping elements include a series of pistons.

16. (canceled)

17. (original) The engine system of claim 14, wherein the fuel injection system includes a fuel injection unit adapted to selectively inject one of the first and second flows of pressurized fuel into the at least one combustion chamber.

18. (canceled)

19. (currently amended) The engine system of claim ~~[[18]]~~14, wherein the fuel injection system includes:

a first fuel injection unit in fluid communication with the first manifold; and

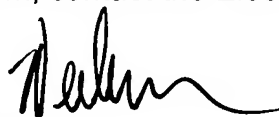
a second fuel injection unit in fluid communication with the second manifold.

20. (original) The engine system of claim 14, wherein the first and second pumping elements are disposed in first and second pumping housings, respectively.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Weilun Lo whose telephone number is (571) 272-4847. The examiner can normally be reached on 8:30AM TO 7:00PM M-Th.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Henry Yuen can be reached on (571) 272-4856. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Weilun Lo  
Primary Examiner  
Art Unit 3747